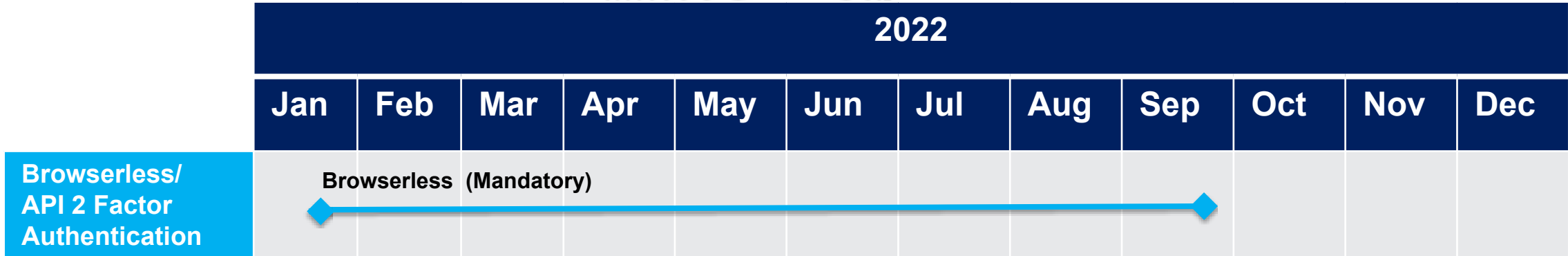# Browserless/API Two Factor Authentication (Public Key Infrastructure – PKI)

As of July 6, 2022

- Updated timeline to implement mandatory Public Key Infrastructure (PKI) for DR Hub, MSRS, and Markets Gateway

Product - Action Required	Dates	Who May Be Affected
Browserless/API Two Factor Authentication (Mandatory) • Obtain valid PKI certificates from approved Certificate Authorities • Rewrite Browserless/API authentication code OR use PJM provided command line interface(CLI) • Make sure 2-Way SSL Connections, Client Certificates & Connection Renegotiation are enabled at Firewall & Security devices for outgoing PJM SSO traffic • **Opt in now**	• **Train: Completed** • **Production: June/July**	**Browserless users of** • Markets Gateway • InSchedule • Power Meter • FTR Center • Capacity Exchange • DR Hub • MSRS

2022											
Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Browserless/ API 2 Factor Authentication	Browserless (Mandatory)										

Legend

◯ Start Date

◆ End Date

Change impacts only Browserless transfers

Web Browser

- **Source:** Web browsers
- **Authentication Mechanism:** Password + Soft Token(One Time Password)

Browserless

- **Source:** Machine to Machine
  - Interactions with PJM web service Application Programming Interfaces (APIs) via custom code or PJM Command Line Interface (CLI)
- **Authentication Mechanism:** Password + Certificate using Public Key Infrastructure (PKI)

InSchedule

DR Hub

MSRS

Power Meter

FTR Center

Market Gateway

Capacity Exchange

Product	Train	Production
InSchedule	January 6 at 4 p.m. (complete)	July 13 at 4 p.m.
Power Meter	January 6 at 4 p.m. (complete)	July 13 at 4 p.m.
FTR Center	January 13 at 4 p.m. (complete)	June 28 at 4 p.m.
DR Hub	February 2 at 4 p.m. (complete)	September TBD
Capacity Exchange	January 13 at 4 p.m. (complete)	June 28 at 4 p.m.
MSRS	January 20 at 4 p.m. (complete)	July 20 at 4 p.m.
Markets Gateway	January 18 at 4 p.m. (complete)	August TBD

- PKI Certificates and PKI/Two-Factor Browserless/API [FAQs](#)

- PKI Authentication [Guide](#)

- Exporting public [keys](#)

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Tool Security Changes

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